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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,577	01/31/2002	Roland Green	700706.90068	9636

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EXAMINER	
FORMAN, BETTY J	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/061,577	GREEN ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 6-9* is/are pending in the application.

4a) Of the above claim(s) *7 and 8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed 2 September 2005 in which claims 1 and 9 were amended. The amendments have been thoroughly reviewed and entered.

The previous objections and rejections in the Office Action dated 2 March 2005 under 35 U.S.C. 112, first and second paragraph are withdrawn in view of the amendments.

The previous rejections under 35 U.S.C. 103(a) are maintained as detailed below. Applicant's arguments have been thoroughly reviewed and are discussed below.

Claims 1, 6 and 9 are under prosecution.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Garner (U.S. Patent No. 6,295,153, filed 4 June 1999), Baker et al (U.S. Patent No. 6,262,795, filed 28 August 1998) and Sweatt et al (U.S. Patent No. 5,870,176, issued 9 February 1999).

Regarding Claims 1, 6 and 9, Garner teaches a method of synthesizing an array of oligomer comprising illuminating synthesis areas using light directed to the areas by a micromirror array to photolithographic synthesis of the oligomers (Column 4, lines 36-65 and

Column 5, lines 37-50). Garner further teaches illumination during a protection group deprotection whereby light directed to an area deprotects (removes) protecting groups wherein it is further taught that deprotection, a critical step in the synthesis, is dependent upon exposure time and illumination intensity (Column 7, lines 46-51 and Column 8, line 56-Column 9, line 9). This clearly suggests that correct illumination intensity is important for photosynthesis.

Garner also teaches that light is redirected or deflected by the micromirror array and their method utilizes a shutter for decreasing the amount of light striking the mirror (Column 4, lines 43-46 and 54-60). Furthermore, Sweatt et al teach a similar microarray mirror and method of photolithography wherein the micromirrors are individually controlled to redirect light from the mirror by putting a selected mirror in the "off position" thereby reducing the amount of time light is delivered to the surface (Column 3, lines 10-28).

This clearly suggests that during operation, the mirrors of the array are adjusted to alter the amount of light going to and from the micromirror and thereby adjust illumination intensity. Garner and Sweatt do not specifically teach the adjustment is based on a mathematical evaluation of illumination differences to correct non-uniformity across the area.

However, Baker et al teach that the need exists for obtaining and maintaining uniformity of illumination intensity during photolithography because non-uniformity results in non-uniform synthesis (Column 2, lines 1-34).

Baker et al teach a method of quality control for photolithography comprising measuring illumination intensity of at least two different positions in the illumination area, evaluating mathematically the a difference in illumination intensity and adjusting the illumination intensity of light directed to a brighter position to match that of a less bright position (Column 6, lines 11-25 and Column 7, line 35-Column 8, line 30) wherein "a variety of characteristics" are adjustable to provide the desired illumination uniformity (Column 6, lines 26-28).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to combine the teachings of Garner, Baker and Sweatt to obtain the claimed invention. Garner teaches oligomer photosynthesis using micromirror illumination provides a low cost and efficient method of surface patterning without masks (Column 1, line 64-Column 2, line 6). Sweatt et al teach adjusting illumination by turning off (thereby reducing time) the light from micromirrors going to the surface to provide desired pattern (Column 3, lines 10-28). Baker et al teach the known problem of non-uniform illumination exists and suggests various characteristics be varied to provide uniform illumination (Column 6, lines 11-25 and Column 7, line 35-Column 8, line 30). Taken together, one of ordinary skill in the art would have been motivated to measure and adjust the illumination intensity at synthesis positions and repeatedly at each position by redirecting illumination to thereby correct non-uniform illumination based on the photolithography problems associated with non-uniform illumination taught by Baker et al and for the expected benefit of providing more accurate devices (Baker et al, Column 2, lines 1-34).

Response to Arguments

4. Applicant assert that all of the micromirrors in the array of Garner are turned on and off in unison to stop or start synthetic steps. The assertion is noted, however Applicant has not pointed to any such teaching in the Garner reference. In contrast to Applicant's asserted unison on-off control, Garner specifically teaches means for adjusting light during use, light is "redirected or deflected", a lens is used to "focus or diffuse light to illuminate the substrate", and a shutter for "decreasing" light going to the mirrors.

Applicant asserts that the combination of Garner and Baker would lead one of ordinary skill to measure intensity and then create a mask to adjust intensity variations. The argument has been considered but is not found persuasive. Baker specifically teaches that a problem exists with photolithography, that problem being non-uniform illumination (Column 2, lines 1-5). Baker further teaches the problem "arises from non-uniform or non-homogeneous

characteristics of the lenses and other optical devices used in the photo lithography apparatus." (Column 2, lines 24-34). From the teaching of Baker, one of ordinary skill in the art would have been motivated to modify the photolithography method of Garner by evaluating illumination uniformity. And finding any non-uniform illumination, adjust the optical device as suggested by Baker (e.g. mirror array, whereby light is deflected, redirected, focused, diffused, and/or decreased to thereby correct any non-uniformity).

Applicant asserts that the references do not teach or suggest illumination for a shorter period of time for brighter illumination areas. The argument has been considered but is not found persuasive because as cited above, Garner teaches the critical aspects for high quality synthesis are UV intensity and exposure time (Column 7, lines 48-51). Therefore given Baker's suggested illumination adjustments, decreasing exposure time would have been an obvious means of decreasing illumination in the method of Garner.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

6. No claim is allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
November 15, 2005